LED Streetlights - What's Your Plan?
Green Communities Webinar Q&A
September 11, 2013

General Questions

Q: Is it possible to obtain a copy of the slides along with the voice recording?

A: Both the slides and recording are posted on DOER's web site within approximately 48 hours of the webinar at http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/webinars.html

Q: How many communities participated in the webinar?

A: There were 58 registrants from 33 communities, plus representatives from state government, regional planning agencies, electric utilities, and energy companies.

Q: Where do I find out if we own our street lights?

A: Please contact your electric utility representative.

Technology and Application Questions

Q: Edward: we have 1000's of streetlight with some metered, some not. What issues should we be aware of as we look to convert all to LED?

A: LED streetlights may be installed in unmetered, municipally-owned streetlights. Due to existing utility tariffs, however, local streetlights which are owned by utilities cannot currently be converted to LEDs. DOER is working with the state's electric utilities to develop a coordinated approach to overcome barriers (including tariff issues) and bring the option of LED streetlights to all municipalities in Massachusetts.

Q: What is a typical unit cost to replace with LED streetlights?

A: Costs range from $250-$400 typically, with specialty or decorative LED fixtures running much higher up to $1200 each. Costs depend upon the municipality's ability to partner with other municipalities to increase purchasing power, their means of installation, and their financing mechanism. Additionally, through the Mass Save efficiency program, the electric utilities are able to provide incentives for the conversion of streetlights to LEDs. Both of these options will decrease the total cost and improve the payback timeframe.

Q: How much do controls add to the cost?

A: The cost of controls varies, but typically will run $100-$200 per streetlight. Utilities require utility grade metering (that exceeds IEC 62053/ANSU C 12.20 standards), and are able to bill according to the actual kWh usage of the streetlights with controls.

Q: The majority of our streetlights are 50W HPS. Would converting them to LED produce a significant energy savings for these streetlights?

A: The amount of energy saved by converting 50W high pressure sodium streetlights to LEDs depends upon the LED wattage, how many LEDs the driver is selected to run and any additional

timing or photometric controls. Often, a 50W HPS streetlight (with a 5W driver) will be replaced with a 24W LED; this represents a 56% in energy savings while maintaining a constant lighting level (50W HPS at 2,920 lumens versus a 24W LED at 2,900 lumens). Although there is a high percentage of energy savings upon conversion of 50W HPS streetlights to LEDs, the total amount of energy savings (27 W, approximately 100 kWh per year) is relatively low for each fixture. This is why it is more cost-effective to bundle high wattage and low wattage streetlight conversions together in one retrofit package.

Q: We are very interested in LED streetlights in Melrose, but the bulk of our 3,000 streetlight inventory is 50 watt HPS. Under the new NGrid tariff and incentive structure, switching to LEDs has a projected payback of about 7 years which is longer than stakeholders anticipated. Any advice on how to overcome that concern?

A: If you factor in the NGrid incentives and the reduced maintenance savings this should bring this down to under 4 years.

Q: Thanks for the webinar on LED Street lights. It was very informative. I think it is a very difficult issue at this point in time. We all want to save energy but there is no financial justification.

Franklin bought 1,600 street lights from NGRID about 10 years ago and we have saved a lot of money in the deal. The "payback" was less than 4 years. Our annual electric cost for all the street lights is about $114,000 per year. If we saved 30 or 40% that would be $35-45K. Buying 1,600 LED street lights plus installation at say $700 each would be over $1,100,000. The payback is much too long. It needs to get down in the 4 or 5 year range to make it worth the investment. Hopefully the cost of lights will come down and we can justify the expense

A: The cost of LED streetlights has already declined greatly in the last year. Municipalities are now purchasing LED streetlights in the cost range of $250-$600 each for non-decorative lights, depending upon their ability to partner with other municipalities to increase purchasing power, their means of installation and their financing mechanism. Additionally, through the Mass Save efficiency program, the electric utilities are able to provide incentives for the conversion of streetlights to LEDs. Both of these options will decrease the total cost and improve the payback timeframe.

Q: Are LEDs appropriate for outdoor stadium lighting?

A: Yes, there are a number of manufacturers that produce High-Power LED flood lights for large area sports fields. Please contact your local lighting distributor or manufacturer's representative.

Q: Can Mr. Bartholomew speak to successful LED streetlamps that have been installed in strict Historic Districts? (On Nantucket, we fear public backlash for any lights that don't resemble whale oil lamps!)

A: To accommodate the look and output of historical fixtures typically requires a custom solution. This would require a lighting designer to design an LED lighting fixture that maintains the historic look while providing the needed lighting for the area.

Q: Can you describe the fixture cleaning that is required. Typically how often? Any special products needed?

A: Fixture cleaning is important to retaining the amount of illumination and is typically done annually or biannually. No special products are needed.

Q: How does induction lighting compare to LEDs for streetlights?

A: Induction lighting provides a similar quality of light at about the same costs. Unfortunately, induction technology has not improved as rapidly as LED technology and industry forecasts are for LEDs to exceed the efficacy of induction in a few short years. There also are fewer manufacturers of replacement lamps for induction.

Q: In your presentation you only use street lights but the applications include Traffic lights. Our traffic light cost is many times our street light cost. Are the study processes the same for traffic and street lights?

A: LEDs have been used in traffic lights extensively and are in fact the most common technology in traffic lights, as shown on slide 14. Typically, when retrofitting traffic lights with LEDs, they are replaced 1-for-1 since their primary role is for traffic control rather than for illumination.

Q: What grant opportunities does DOER offer for communities with municipally-owned utilities? We would like to implement LED streetlights but want to identify opportunities to offset the transition costs to LED.

A: There are several ways that DOER is providing assistance to all communities, including those served by municipal lighting plants, as briefly described below:

1. A funding opportunity for Owner's Agent Technical Assistance has been released and will begin accepting applications on Thursday, October 3rd at 9:00 a.m. This technical assistance will fund an owner's agent to assist with energy savings performance contracts; these contracts have been used by Massachusetts municipalities to convert to LED streetlights either alone or in conjunction with other efficiency projects. Please see http://e2.ma/webview/0zk5h/59d2ea40150412858cdc597778d2b2f4 for details.
2. Designated Green Communities are eligible for grant funding for LED streetlights. Communities served by a municipal lighting plant may become a Green Community if a) they adopt the renewable energy charge (see https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25/Section20) or b) residents or business within the municipality are served by an investor-owned electric utility (see http://www.mass.gov/eea/docs/doer/green-communities/grant-program/mlp-guideline-may-2012.pdf) AND if they meet the five designation criteria (see http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/gc-grant-program/).
3. Municipalities may purchase LED streetlights off the statewide contract; this allows municipalities to take advantage of negotiated pricing and one less step in the

procurement process. See www.comm-pass.com, FAC76 (from comm-pass home page, click contracts tab, search, document number FAC76).

Additionally, some Regional Planning Agencies such as the Metropolitan Area Planning Commission, are working to assist municipalities, including those served by municipal lighting plants, with group procurement of LED streetlights.

Tariff Questions

Q: Is there a separate tariff for municipal owned street lights?

A: Yes, each electric utility has a separate tariff for municipally-owned streetlights. The electric rates for municipally-owned streetlights are lower than for utility-owned streetlights because the municipality has assumed the liability and maintenance responsibilities of the streetlights.

Q: Can you explain the new National Grid tariff structure?

A: National Grid's new tariff for municipally-owned streetlights became effective June 3, 2013. This tariff enabled cost savings to be realized when LED technology is used in streetlights owned by a municipality, governmental entity or public authority. The tariff is for unmetered streetlights and is structured into six wattage ranges based upon its nominal wattage. Each wattage range specifies a billable wattage value set at the midpoint of each range, which will be used to determine the annual kWh usage applicable to each LED luminaire. These are:

Nominal Wattage (includes LED, driver and control)	Billable Wattage	Annual kWh
0.1 to 50.0	25	104
50.1 to 100.0	75	313
100.1 to 150.0	125	522
150.1 to 200.0	175	731
200.1 to 250.0	225	939
250.1 to 300.0	275	1,148

So, for example, replacing a 100 W high pressure sodium streetlight with a 40W LED would result in being billed for 104 kWh per year whereas replacing it with a 65W LED would result in being billed for 313 kWh per year.

Q: I thought that was one of the best webinars on LED streetlights I have heard. I would like a copy or better yet an explanation of how the National Grid tariff works – it sounds very confusing – from my

understanding it would almost make for sense to replace our 50 Watt fixtures with 100 Watt LED and add the controls to lower them to the 50 watt level to get any savings – help on understanding the structure would be very helpful.

A: The various options for LED streetlights and controls can be confusing due to the number of options available. This is one of the reasons that DOER recommends working with a lighting designer and/or owner's agent for technical assistance. However, increasing wattages on lights will a) result in a higher purchase cost and b) likely result in a higher electricity bill, even with controls.

Q: All of our street lights are owned by National Grid and it was my understanding there was no tariff for LEDs? Can National Grid do the work through their existing tariff?

A: You are correct, there is currently no tariff establishing rates for LED technology in utility-owned streetlights for National Grid nor for any of the electric utilities in Massachusetts. This idea is under exploration by the electric utilities and municipalities should be aware that it may be an option in the future to use LEDs in utility-owned streetlights. However, a timeframe and cost-structure for LEDs in utility-owned streetlights are very uncertain right now. Creating these new tariffs involves a very complex interplay of factors including, but not limited to, the cost of maintenance of the lights, the cost of the energy, and the cost of the LED replacement fixtures. Therefore, although the municipalities would certainly see a reduction in energy use, the cost savings are currently uncertain.

Q: Where in the process is NSTAR in getting a new tariff for LED streetlights? Expected timeline?

A: For municipally-owned streetlights, NSTAR's existing tariff accommodates LED technology. For utility-owned streetlights, please see answer above.

Q: Many of the municipalities in MA used to have pre-abandonment charges for rental lights removed before a certain period of time after they were installed. Will they waive those charges if a municipality decides to group relamp HIDs with LEDS?

A: Currently, municipalities are unable to install LEDs in utility-owned streetlights. The issue raised regarding pre-abandonment charges is one of the factors in the discussions about the feasibility and structure of potential new tariffs that would allow for LED technology in utility-owned streetlights.

Q: How will adaptive control measures be accounted for on the in-place LED tariffs?

A: Please note that currently controls may be installed only on municipally-owned streetlights. For NSTAR and WMECO, the tariff assigns a charge for LEDs and controls in streetlights based upon the actual wattage being utilized. For National Grid, the tariff charges based upon ranges of wattages.